

Opposites attract: Monkeys choose mating partners with different genes

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The world's largest species of monkey 'chooses' mates with genes that are different from their own to guarantee healthy and strong offspring, according to a new research study.

The results obtained from mandrills, a species closely related to humans, support the disputed theory that humans are attracted to those with a dissimilar genetic make up to maintain [genetic diversity](#).

Female mandrills are more likely to reproduce with males whose [genes](#) are complementary, possibly because they 'smell out' suitable candidates, according to the research team whose results are reported in the [Journal of Evolutionary Biology](#).

The research team, which involved scientists from Durham, Cambridge and Montpellier universities, and researchers in Gabon, Central Africa, analysed blood samples and reproduction patterns of around 200 mandrills living in Gabon.

Although it is not entirely clear how the females work out whose genes complement theirs, the researchers believe it might be done through smell. Monkeys know their own body smell, which is partly determined by their genes. They will sniff out the males whose body odour is different giving an indication that their genetic make up is likely to be unlike theirs, say the scientists.

In addition to the potential role of smell, the researchers speculate that

female mandrills may 'choose' their mates through selective fertilisation. This is where the female mates with a number of males but her body rejects sperm from males with a similar genetic makeup and 'picks' those with genes which complement the female's own.

Lead author, Dr Jo Setchell from Durham University's Anthropology Department, said: "This is an important advance in our knowledge of how [mate selection](#) works in monkeys. We now need to dig deeper and establish how they do this. I think smell is a strong candidate here.

"Mandrills have a scent-gland on their chest, which males rub vigorously against trees. That would be a good way to advertise their presence to females, who could then use the smell signals to determine whether the male was a suitable mate. We don't know anything about what's in mandrill scent-marks yet, but we're working on it.

"Alternatively, it could well be that the female has a sophisticated way of somehow rejecting and accepting [fertilisation](#) depending on the genetic makeup of the sperm. This might help to explain why female primates go out of their way to mate with as many males as possible."

The way [monkeys](#) select their mates all comes down to a group of genes called the major histocompatibility complex (MHC). MHC is a cluster of genes which helps build proteins involved in the body's immune system and affects body odour by interacting with bacteria on the skin.

According to the scientists, by choosing a partner who is MHC dissimilar, animals can increase their chances of their [offspring](#) being better able to resist disease.

Dr Setchell explains: "These results are very exciting, and this is the first time that selection for genetic compatibility has been demonstrated in a species which lives in large multi-male, multi-female groups. Mandrills

are also quite closely related to humans - we're both anthropoid primates - so our results support the idea that humans might choose genetically compatible mates."

Co-author Dr Marie Charpentier from the University of Montpellier, France adds: "Mandrills are famous for their bright colour. The brightness of colours cannot, however, help a female choose for genetic complementarity as this also depends on her own genetic make up. This means that they must be using other mechanisms to identify who to mate with."

Mandrill facts

- The word mandrill means 'man-ape'.
- They are found in the tropical rainforests of southern Cameroon, Gabon, Equatorial Guinea and Congo.
- Males are brightly coloured, with red, blue and purple skin on their face, rump and genitalia, females are less colourful.
- Males can weigh up to 35 kg, [females](#) about 1/3 as much.
- They can live for over 25 years in captivity.
- They are social creatures and can be found in groups of up to 800 individuals.
- In their native habitat, they are hunted for food.

Source: Durham University ([news](#) : [web](#))

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